1-1-2012

Improving reading comprehension: using before, during, and after questioning with second grade students

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Improving Reading Comprehension: Using Before, During, and After Questioning with Second Grade Students

By

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A Graduate Field Experience

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

In Reading and Language Arts

Literacy: Leadership and Instruction

At Cardinal Stritch University

Milwaukee, Wisconsin

2012

This Graduate Field Experience
for Kayla Joy Meyer
has been approved for Cardinal
Stritch University by

(Advisor)

3/28/12
(Date)

Abstract

Some second grade students have difficulty comprehending what they read. This can be due to students not focusing on the plot of the story. This study investigates whether developing questions before, during, and after reading increases reading comprehension. During this six week study, four students who struggled with comprehension, were explicitly taught how to develop questions and then were given time to practice this strategy. A pretest and a posttest were given in order to evaluate student progress. This research shows that the questioning comprehension strategy had a positive impact on most students' comprehension.

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Chapter One
Introduction

As a second grade teacher, I have assisted my students in understanding what they have read and the importance of comprehension. According to JoAnne Schudt Caldwell (2008), comprehension is a complex process, which involves students extracting meaning from written words. In order to extract meaning from text, students need to be able to strategically read. Due to this, students need to go beyond the necessary decoding skills, and use strategies to construct meaning from text. To help students accomplish that task, my district employs the Stephanie Harvey and Anne Goudvis (2007) comprehension strategies as part of our reading instruction. These strategies include teaching students how to make connections, drawing inferences, developing questions, summarizing, synthesizing, and visualizing (Harvey& Goudvis, 2007). The introduction of these strategies in second grade helps most students understand what they read. Through discussions and written responses, students demonstrate that they are thinking about the text in multiple ways and understanding the text.

However, it is my experience that there is always a small group of students who struggle with comprehension. I believe that the students who struggle with comprehension in my classroom show a lack of interest in reading. I believe that reading isn't enjoyable for these students because they do not understand the text, and therefore they are reading less than other students. This minimal practice of reading affects their progress and grades. My action research was designed to see if focusing on one comprehension strategy would enable students to strengthen their comprehension skills so that students could understand what they read and enjoy reading. I chose to focus on the questioning strategy because I felt it helped many students in my classroom think about their reading in order to understand it better. I have observed some

students from past years who could read the words on the page, but could not tell me what happened in the story, start to understand the plot of the story after modeling and having them practice the questioning strategy. After reading the research of Rosenshine, Meister, and Chapman (1996), Broek, Tzeng, Risden, Trabasso, and Basche (2001), Davey and McBride (1986), and Mason (2004), in who all discuss variations of using before, during, and after questioning, I was interested in determining if making questions before, during, and after reading would help increase students' comprehension abilities. To help me develop my plan for this action research, I reviewed additional research that evaluated students' use of questioning.

Terms Used

Throughout my research I use terminology in which I will define in this section. First, the questioning comprehension strategy is when students formulate questions about the text. By formulating questions, students are interacting with the text which aides in students' comprehension (Harvey & Goudvis, 2007). In this study, students thought of questions before reading, during reading, and after reading. Another term that is used, while discussing a specific research that I studied, is repeated readings. Repeated readings are when students read the same text more than once. In another description of research, the term stratified random sampling is used. Stratified random sampling is when subpopulations of an overall population are selected before collecting data to ensure all groups are represented (Ravid, 2005).

Description of Context

This study lasted for six weeks beginning on March 1st, 2011 through April 8th, 2011. It was performed in a suburban elementary school with four students who were part of my second grade class. Participants were selected by the Qualitative Reading Inventory-4 (QRI-4) (Leslie & Caldwell, 2006) reading assessment that was given to all students in the classroom. Those that

scored at the frustration level for comprehension were selected because I wanted to help those students increase their comprehension to the instructional level. None of the students who were selected were part of a special education, gifted, or English Language Learners program. Of the selected individuals, two were girls and two were boys from ages ranging from seven to eight.

I met with the group three days out of the week for at least twenty-five minutes. After a pre-assessment was given, I met with the group while modeling and scaffolding students' use of the questioning comprehension strategy. I collected questions that students developed to assess their application and understanding of the strategy and informally determined the level of support that each child needed. After students had been given six weeks to practice the questioning strategy, a post-test was given from the QRI-4 at the level they achieved on their pre-test. The results between the pre and post test were then analyzed.

Connection to Common Core Standards

My research is connected to the Wisconsin Common Core State Standards. For example, the reading literature standard number 10 (RL.10), for grade two students, states that by the end of the year, students need read and comprehend literature, including stories and poetry, in grades 2–3 text complexity band proficiently, with scaffolding used as needed. The strategy of developing questions before, during, and after reading was taught to students in order to increase their comprehension of grade level text. Scaffolding was used to assist students in developing questions throughout the study. This research is also connected to the standard RL.1 which states that students need to ask and answer questions to demonstrate understanding of key details in a text. Students were directed to generate questions about the text. In order to do this, students had to reflect on their reading and the events that occurred. Some questions that students developed showed a need for clarification, such as questions pertaining to vocabulary

words and about details of the text, while others showed students' interpretation and analysis of the text such as how a character reacted.

Question

The purpose of this study is to try to answer the question of whether or not the increased use of the questioning comprehension strategy would increase the comprehension of second grade students. To increase the use of the questioning strategy, students were asked to generate questions before, during, and after reading. A template was used for students to record their questions and organize the questions into the categories of before reading, during reading, and after reading. Modeling and scaffolding of this task were performed throughout the study.

Conclusion

My observations of readers in my classroom influenced my decision in choosing the questioning comprehension strategy for my action research. This research was personal and important to me because it had the potential to help my students increase their comprehension. However, it was imperative for me to be knowledgeable of other studies on questioning before I implemented my research. In the next chapter, I will review the studies that I read that contributed to this action research.

Chapter Two
A Review of Literature

Introduction

This chapter includes twelve studies pertaining to the questioning comprehension strategy. The first studies introduced reveal how the use of questioning affects reading comprehension. The next studies explore questioning that takes place before, during, or after reading and how the timing of questioning influences comprehension. The last studies that are included investigate specific questioning strategies and their effectiveness. These studies provide important perspectives for this action research that entail comparing questioning and reading comprehension.

Studies on Questioning

The focus of this section is to examine research that discusses how questioning affects comprehension. The first study explores the effectiveness of using metacognition to develop questions. The second study summarized in this section is a qualitative study on questioning in classrooms. The third study combines the comprehension strategies of questioning and visualizing in hopes of increasing students' comprehension. The studies involve different approaches to their research, but they all provide insight into the reading comprehension strategy of questioning.

The study by Glaubman, Glaubman, and Ofir (1997) investigated self-questioning among kindergarten students. The purpose was to explore the effects that self-questioning had on kindergarteners' narrative text comprehension. The researchers hypothesized that self-questioning would improve students' comprehension. The independent variables were that one group would be given instruction on active processing in order to develop questions, while a second group would be given instruction on metacognition in order to produce questions. The researchers hypothesized that the group receiving metacognition instruction would surpass the

group receiving active processing instruction because they felt the students in the metacognition instruction group would be able to produce more questions that were of higher quality. There was also a control group used for comparison that received no additional instruction. The dependent variable was a four-level scale to measure the quality of questions that students developed. The scale categorized questions from low meaning questions (questions that had no effective use) to high meaning questions (questions that can be used to evaluate, analyze, or synthesize the text). Additional measures were also used to assess comprehension. Questions were asked after reading a narrative passage to test students' level of understanding. Students were also asked to complete a retell of the passage to determine their knowledge of the text. The scores for all the assessments were combined to give one overall score for comprehension for each student.

The participants used for this study included seven randomly chosen kindergarteners. These children all spoke Hebrew and lived in a medium-sized city in Israel. The children were split randomly into three different groups. Two children were in a group that worked on active processing in order to facilitate question development, while two other children were in a group that worked on metacognition to facilitate question development. The three remaining students were in the control group. To test the long term affects of these teaching strategies, the researchers assessed the students after three months.

After pretesting took place, the metacognition group started their instruction in which the ultimate goal was for students to produce quality questions. They were first given instruction on how to formulate questions while reading to understand the process of questioning. Then, students were taught the wording used to formulate questions and how to question the meaning of unknown words contained in the text. Then, students were taught how to deepen their

questions by relating question development to the students' senses. For example, students were taught to think of a question about the setting they could "see" or words that accompanied the descriptions. Next, students were given instruction on the purpose of questioning words and matching what they wanted to know with the appropriate questioning words. Students were urged to think about what they wanted to know and to enhance the meaning of their questions.

The active processing group was also pretested before instruction began. Students were then given lessons on developing questions about different objects. Students were encouraged to ask questions about objects' qualities and functions. The goal was for students to generate different kinds of questions and improve their vocabulary. Students did not receive instruction on developing or distinguishing between the quality of questions created.

The control group used the instruction that was used regularly by classroom teachers. This instruction involved students being encouragement to ask questions about the daily curriculum, but it was not done using a structured procedure. Students were not given any training on developing questions or given any direction with formulating quality questions.

The combined assessment scores for comprehension showed that the metacognition group scores were significantly higher than the active processing group and the control group based upon a two-tailed test. The active processing and the control groups' scores were equal. Although each group showed gains in their comprehension scores when comparing pretest to posttests, the metacognition group showed the greatest gains. In terms of generating higher-level questions, the metacognition group was the only group that achieved a considerable increase. These findings not only confirm the researcher's hypothesis, but also demonstrate that the effects of different teaching methods of the questioning strategy are significant (Glaubman, Glaubman, & Ofir, 1997).

Instead of examining the effects of different instruction methods for teaching questioning skills, a different study observed elementary classrooms to determine how questioning is executed currently. Indeed, Parker and Hurry (2007) performed a qualitative study on the use of questioning in primary classrooms. Based upon research on questioning and its positive effect on comprehension, the researchers wanted to determine how often questioning is explicitly taught and the amount of time that is given for students to formulate questions. Since Parker and Hurry (2007) performed a study that was similar to a study done in 1979 by Dolores Durkin, they hypothesized that the amount of time currently allocated for instruction and student questioning would have increased from the time of Durkin's study.

This study took place using thirteen different primary schools in London. The researchers observed fifty-one classrooms as teachers taught literacy for an hour. No other information was given on the students in the study. Interviews were taken with all teachers from the classrooms and literacy lessons were videotaped. Each lesson lasted between forty-five minutes to one hour. The researchers observed different literacy events which include different types of literacy instruction, class discussion, and students' reading/writing activities. After recording eighty literacy events, only twelve types of literacy events were chosen for this study which included a total of forty-four hours of classroom observation.

When interviewed, the fifty-one teachers were asked to share strategies they thought were effective for teaching comprehension. The researchers then categorized teachers' responses into the areas of direct questioning, specific teaching, and other teaching methods. After the literacy lessons were videotaped, any questions were recorded and the responses to student questions were coded. The researchers watched all videos and then categorized interactions by the areas of teacher questioning, teacher modeling, teaching explicit strategies, and pupil questioning. The

interviews and the video observations were transcribed onto NVivo. This software helped investigate the qualitative data that was collected.

The results from the teacher interviews showed that direct teacher questioning was the most popular method for helping students improve their reading comprehension. Out of the total types of instruction references in the interviews, direct teacher questioning made up 45% of the data. On the other hand, encouraging children to question the text only made up 2% of the data. The videotapes also showed that the majority of the literacy time was spent with direct teacher questioning. In fact, 70% of the lesson was devoted to this task. The researchers believe that the emphasis on direct teacher questioning puts students in passive roles instead of giving students opportunities to elaborate and use higher order thinking (Parker & Hurry, 2007).

The next study by Clark, Deshler, Schumaker, Alley, and Warner (1984) explored the implementation of the comprehension strategies of visualizing and questioning to determine if they would improve comprehension in students with learning disabilities. The researchers hypothesized that the two strategies would indeed improve learning disabled (LD) students' comprehension. This descriptive study compared students' results on the seven different assessments taken before and after the implementation of the comprehension strategies. Four of the tests assessed students' abilities to use visual imagery to aid in comprehension after reading. The assessments involved having students read two texts at their ability level and two texts at their grade level. In only two of the four assessments, students were prompted to make visual images in both sets of texts (one at ability level and one at grade level). The other three tests assessed students' skills in self-questioning. After reading two passages, one at ability level and one at grade level, students had to answer ten comprehension questions. Next, students had to

read another text at their ability level and were prompted five times to ask questions while reading. Finally, the teacher would record information about the questions that were developed.

The instruction of the comprehension strategies of visual imagery and self-questioning were given to six learning disabled students between the grades of eight and eleven. Three of the six students were male and three were female. These students had IQ's between 81-103, and had no other special needs. The students showed deficiency in at least one or more academic area.

Before instruction took place, assessments were taken to determine students' ability levels. Then, instructional sessions were taught by certified teachers. The strategies were taught separately, with visual imagery being taught first followed by the self-questioning strategy. The teachers explained the steps of each strategy and also shared the reasons for each step. Then, the teacher explicitly modeled the strategies and students participated in orally rehearsing the steps of the strategies. Next, students practiced with teacher-chosen materials consistent with the students' current ability level, and after that with texts consistent with the students' grade level. Feedback, both constructive and positive, was given at each instructional session. After the instructional sessions were given, a posttest was administered.

The instruction for visual imagery was centered on having students first read the passage and then making an image in their heads. They then were instructed to describe the image and evaluate the image for its completeness. These steps were repeated as the students were learning how to visualize. The self-questioning strategy was taught by having students read the text and practice asking "WH" questions (i.e. who, what, where, etc) while reading. Students were also instructed on how to answer questions as they read the text and learn to mark the place where that question was answered by using symbols such as a clock face when the answer of "when" was found.

After the posttests were taken, the results of the implementation of the two strategies were analyzed. The posttests showed that all students were able to perform both strategies successfully in ability level text. Also, every student except for one was able to apply the strategies to grade level text. The posttest results showed an overall increase in students' comprehension scores in both ability text and grade level text. In terms of visual imagery, students' mean increase in comprehension scores with ability level text rose by 28.9 percentage points when not prompted to use the strategy, and by 23.8 percentage points when prompted to use the strategy. Using grade level text, the mean comprehension scores without prompting to visualize rose by 13.9 percentage points versus 39.7 percentage points when prompted. The self-questioning strategy also showed an increase in mean comprehension scores. With ability level text, students' scores rose by 36.9 percentage points from the pretest. Using grade level text, scores rose by 43.8 percentage points. In summary, the researchers concluded that student performance started to increase only after each strategy was explicitly taught. They also noted that with the small sample size used, results could not be generalized until further replications of the study were preformed (Clark, Deshler, Schumaker, Alley, & Warner, 1984).

Before, During, or After Questioning

This section is comprised of studies that explored the timing of when questions were developed or answered. The first two studies explored questions that are either generated or provided to students during or after reading. The third study in this section focuses solely on questions that are developed after reading and how that affects comprehension. The last study in this section compared the effectiveness of developing questions before, during, and after questioning to the method of reciprocal questioning. The differences in these studies provide insight on how the timing of questioning can affect comprehension.

In this study, Rosenshine, Meister, and Chapman (1996) performed a review of a compilation of question generation studies done by others. The purpose of this review was to explore the effectiveness of question generation in helping students comprehend text. Another purpose of this review was to evaluate the instructional practices used by different researchers. Rosenshine, Meister, and Chapman did not list a hypothesis for this review.

The researchers had specific criteria when selecting studies to analyze. The studies had to include student generation of questions during and after reading and there also had to be experimental groups and control groups. The studies also had to a have a posttest in which the assessed text was new to students instead of previously used. There were twenty-six studies that met these criteria. Seventeen of the studies solely taught question generation, and nine of the studies taught question generation through the use of reciprocal teaching.

In order to compare the different studies, effect sizes were determined by finding the differences between the experimental and control groups and then dividing that number by the standard deviation of the control group. The effect sizes were calculated only on scores from comprehension posttests that were included in the studies. If studies included more than one comprehension posttest, separate effect sizes were reported. The analysis of this data allowed the researchers to examine the effectiveness of the question generation strategy. In order to evaluate instructional techniques, the researchers grouped the studies based upon what scaffolding strategy was used. They used five categories of prompts to group the studies which were signal words, generic question stems and generic questions, the main idea of a passage, question types, and story grammar types.

When the results were analyzed, it was found that the median effect sizes on the standardized comprehension tests and the experimenter-developed comprehension tests were

significant. It was also found that the results of the experimenter-developed comprehension tests were larger than the results on the standardized comprehension tests. The median effect size on the standardized tests was 0.36 and the median effect size on experimenter-developed comprehension tests was 0.87. This data shows that students increase their comprehension when question generation is taught and applied. The researchers then analyzed the effectiveness used by the five scaffolding prompts. The use of signal words yielded significant results in all studies that contained this strategy. Generic questions/generic question stems and story grammar categories produced similar results with most of the studies showing significant results according to their effect sizes. Finding the main idea of the passage to develop questions and focusing on developing different question types offered the smallest gains (Rosenshine, Meister, & Chapman, 1996).

Similar to the last study, Broek, Tzeng, Risden, Trabasso, and Basche (2001), performed a study that concentrated on the timing of questioning. However, the difference in this study is that instead of focusing on student generation of questions, the students received questions in which they had to answer. The purpose of this study was to determine the effects of inferential questioning of narrative text and if the timing of receiving the questions, during reading or after reading, had an effect on students' ability to answer the questions correctly.

The independent variables were that one group of students was given fourteen inferential questions during reading and a different group was given the same questions they had to answer after the reading was already completed. The control group wasn't given questions to answer. The dependent variables were the written responses to the fourteen questions that the two groups had and a written recall of the stories' events for all groups. These responses were then propositionally analyzed by being coded in order to score the responses.

The participants of this study included sixty fourth-grade students, sixty seventh-grade students, and sixty tenth-grade students. All of these students came from public schools in the Midwest. In addition to these students, sixty undergraduate students from the University of Minnesota also participated in the study. The two groups that received questions and the control group that did not receive questions consisted of twenty students from each grade level. The study description did not mention whether these participants were randomly assigned or not.

Once students were grouped, they received a booklet that either had questions interwoven in the text, questions after the text, or no questions at all. All students read the instructions that were contained in the booklets and then did a sample story for practice as a group with the teacher leading the activity. After the practice story was read and any practice questions answered, students then read a narrative text at their own pace. Students had to answer any questions that were given in the space provided in their booklets. After the students finished reading the text and answered any questions, they then had to give a written recall of the story on a separate sheet of paper.

The results of this study showed a general trend that the students in higher grade levels recalled more than the students in lower grade levels. The data also showed that students that were in the during-reading questioning group recalled about the same amount of information as the students in the control group in seventh grade. Students in fourth grade seemed to benefit the least when it can to during-reading questioning. In the discussion section of the study, the authors found that this may be due to the extra burden on students' working memory and answering questions distracts the reader from comprehending the overall text (Broek, Tzeng, Risden, Trabasso, & Basche, 2001). The study also presents that the students in the after-reading questioning group recalled less information than the control group, except for college students.

Only college students were seen to have an improvement in their recall by having questions during reading or after reading in comparison to the control group.

In contrast to the previous studies, Davey and McBride (1986) preformed a study with the purpose of examining the impact of questioning for literal and inferential comprehension and how developing questions after reading affects comprehension. The authors' hypothesis with respect to the anticipated effects of questioning on literal and inferential comprehension was not stated. There were two independent variables: a group that was given instruction on question generation, and a separate group that was given instruction on re-reading. The dependent variables were the eight comprehension questions that students had to answer after reading a passage. These assessments contained literal and inferential questions that were scored using a set rubric.

There were fifty-two students who were given the instruction and assessments. These students, although randomly selected, were all in sixth grade and all scored below grade level on the *California Achievement Test.* The students were then randomly allocated into the two treatment groups (those receiving instruction on question generation and those receiving instruction on re-reading).

After reading each passage in the question generation group, students were prompted to formulate two questions that covered important aspects of the passage. Then, students were asked to answer the eight comprehension questions about the passage by writing their responses below the questions. Students were not allowed to look back to find the answers to either the questions they generated or the answers to the eight questions once the passages had been read. In contrast, the group that was given instruction on re-reading was asked to re-read the passages after each initial reading. While re-reading the text, the students were directed to study the text

closely. Finally, the students answered the same eight comprehension questions asked to the other group.

The results concluded that the question generation group had statistically significant gains in answering inferential questions. However, the re-reading group outperformed the question generation group on literal questions. Another important conclusion that was made was that reading ability did not have a significant effect on students' abilities to apply the question generation strategy. Indeed, inferential comprehension was increased with students regardless of their reading level. Davey and McBride (1986) noted that this observation supports other research studies in which it was determined that students that are given instruction on formulating high level questions have an increased comprehension at the inferential level, as they are elaborating upon what they read. The re-reading group was thought to do better at literal questions because they were studying and paying attention to the details of the passage versus the higher order thinking (Davey & McBride, 1986).

The next study counteracts the passive role of students by investigating the idea of reciprocal questioning and comparing it to a different instructional strategy. Mason (2004) conducted a study to compare two different teaching strategies to distinguish which one is the most effective. The author noted that both methods have been used to increase students' comprehension. However, the author did not state her hypothesis on which strategy, the think before reading, think while reading, and think after reading (TWA) strategy or the reciprocal questioning strategy, would be more beneficial. She did, however, hypothesize that improvement on oral retell would also yield improvement in written retell as part of the assessment of comprehension. Mason (2004) also hypothesized that self-efficacy and intrinsic motivation would increase after students received comprehension instruction.

The independent variables in this study were two different teaching strategies, the first being *T*hink before reading, think *W*hile reading, think *After* reading (TWA) instruction and the second being reciprocal questioning (RQ) instruction. In reciprocal questioning, students are given the opportunity to ask questions of the teacher first following a period of silent reading, followed by a role reversal in which the teacher then asks questions to the students. The dependent variables included oral measures, which consisted of the quality of the main idea statement, the quality of the paragraph summary, and the quality and quantity of information in an oral retell. Other assessments included a written retell and scores on self-efficacy, intrinsic motivation, and social validity. The text materials included expository reading passages in the subject areas of science and social studies. The same passages were read in both groups.

This study was conducted with fifth grade students who struggle in reading. They were deemed struggling readers based upon their scores on a basic skills test placing them between the 10^{th} and 40^{th} percentiles and the students' ability to only decode words at a third grade level. Thirty-two students that met these criteria were used for this study. Of these students, three-fourths of them received free or reduced lunch. The majority of the students were African-American with only six other students belonging to a different race. Five of the students were identified to have learning disabilities. Fifteen of the students were male and seventeen were female. The thirty-two students were randomly assigned to one type of instruction.

The author described in detail the instruction that was given to both groups. The group receiving the TWA instruction was asked to think about the author's purpose, students' background knowledge and what they wanted to learn from the reading before reading the text. Then, they were given instruction to think while reading. Students were taught to think about reading speed, making connections, and to consider whether rereading was necessary. After

reading, students were instructed to think about the main idea and summarize the information. The lessons incorporated self-regulating techniques to help students become independent and metacognitive readers. Some of the lessons were repeated to help students learn the steps of the TWA process. The lessons started with teacher modeling and explicit teaching, but then moved on to partner work and the independent work.

The same gradual release of responsibility was used in the RQ group. However, the teacher did not use think alouds to teach the strategy. Instead, the teacher only modeled the process and directions for reciprocal questioning. Students were told to ask the teacher questions after reading and then the teacher would ask the students additional questions. A chart that gave examples of high-quality questions was used by the students, but each lesson centered on making students more independent in asking questions. Some of the lessons were repeated until students demonstrated an understanding for the skill being taught.

After the lessons in both groups ceased, the oral and written assessments were taken to determine the level of effectiveness of the strategies. Gains were made from the pretest in reading comprehension, writing abilities, self-efficacy, and intrinsic motivation in both groups. However, the use of a t-test revealed that there was no statistically significant difference between the efficacy of the two strategies. Both types of instruction showed a strong correlation at the $p < .01$ level to the increase in oral retell and written retell abilities. The researcher then proceeded to analyze the covariance via an analysis of covariance (ANCOVA), which showed no differences in written retell, self-efficacy, intrinsic motivation, or social validity between TWA and RQ. The research showed that both the TWA strategy and RQ made a positive impact in students' comprehension. However, with respect to improvement in reading comprehension based upon the oral measures, TWA was seen to be more effective than RQ (Mason, 2004).

Specific Questioning Strategies

The studies in this section explore different questioning strategies. Each of these studies uses a specific strategy or method that involves questioning and its effect on reading comprehension. The first two studies in this section examine strategies that have questions that are answered by students, but not generated by them. The next two studies work with specific methods in which students are generating the questions. The last study in this section compares the strategy of using question stems or signal words to develop and answer questions about a text. Even though the studies contain different methods and strategies, they were all used to help increase students' comprehension.

The first specific questioning strategy that is discussed was performed by Therrien, Wickstrom, and Jones (2006). The researchers combined the questioning comprehension strategy with repeated readings. The purpose of this study was to examine the effectiveness of the intervention Reread-Adapt and Answer-Comprehend (RAAC), which combines questioning and repeated reading instruction with struggling readers. The researchers hypothesized that the RAAC intervention would be effective in increasing students' reading achievement because re-reading a text would provide the opportunity for students to concentrate on the meaning easier (Therrien, et al, 2006).

The independent variables were one group of students that received the RAAC intervention and another control group that did not receive the intervention. The dependent variables included a checklist that consisted of instructional components and phrases that were to be used to collect data of the treatment group. Also, correct words per minute were determined after each passage was read. In addition, inferential and explicit questions were asked and the number correctly answered were recorded with the last readings. A pretest and posttest were

used to measure improvements made by the participants. Also, students' fluency was assessed using dynamic indicators of basic early literacy skills (DIBELS) and students' reading achievement was assessed using the Woodcock-Johnson Achievement Test III.

The participants, all from a rural school district in Ohio, included thirteen students in fourth grade, ten in fifth grade, six in seventh grade, and one in eighth grade. Of these students, sixteen of them had learning disabilities and fourteen of them were at risk for reading failure (reading two grade levels below grade level). Fourteen of the students were female and sixteen of the students were male. Students were allocated to the control group or the intervention group using a stratified random sampling to ensure all grade levels and reading abilities were represented in each group. One student from the control group moved during the study so the final numbers were fourteen for the control group and fifteen for the intervention treatment group. The study lasted for about four months and each session lasted about ten to fifteen minutes.

The RAAC intervention group was instructed with eight steps to follow including prompts and questions that instructors would say and ask. Cue cards were also given to students that contained basic story structure questions that students would be prompted to read before reading the passages. Correct words per minute were established and each passage was read a minimum of twice and at a maximum of four times. The instructor would provide error correction by either supplying the word(s) and then asking the individual to repeat the word(s). After the final passage was read, the student would answer the cue card questions that were given to him or her before reading with help if needed. Then, the teacher would ask inferential and explicit questions about the passage. The difficulty of the text was adjusted depending on the

words read correctly. Instructors were trained in the procedures explained. Over the course of the intervention, students read fifty narrative passages.

The students who received the interventions increased their reading abilities significantly when it came to their reading rates and their ability to answer inferential questions on a text that was reread. The instructional grade level increased on average for students by 2.07 grade levels. Students read an average of 22.16 seconds faster compared to the first passages students read within each session. This improvement was statistically significant according to a *t* test at the .05 level. When researchers compared the pretest and posttest scores, they found that the students who received the intervention scored higher than the control group. Students in the intervention group increased their correct words per minute by an average of 13.0 compared to the control group who increased by an average of 2.28. After an analysis of variance (ANOVA), it was shown that the difference was statistically significant. On the Woodcock Johnson III, the intervention group increased their score on average by 6.2 and the control group increased their score by 3.0. The ANOVA analysis on these results showed that the difference was not statistically significant (Therrien, et al, 2006).

Differing from the last study, the research done by Liang, Watkins, Graves, and Hosp (2010), examined the effectiveness of using a story map to help students increase their comprehension on fictional text. The term "story map" is used based off of previous research done by Beck and McKeown in 1979. A story map is when questions are developed from the text and put in a sequential order. These questions are then answered by the students after the reading of the text. Liang, Watkins, Graves, and Hosp (2010) hypothesized that using a story map would produce positive results based upon other research that has been done on the topic.

The dependent variables from this study included the questions that were developed for the story maps, anthology questions for the chosen text, multiple choice comprehension questions for each story, and student attitude surveys. The anthology questions came from questions the publisher included for the text. The multiple choice questions were used as an assessment for all groups at end of the study. The independent variable was the types of questions students received after reading (either the story map questions or anthology questions). There was also one group used as a control that did not receive any post-reading questions. The participants used in the study included eighty middle school students with a wide range of reading abilities. Students attended two urban middle schools and the subjects of the study included 16% minority students. Also, eighteen percent of the students qualified for free or reduced lunch.

Over a three week period teachers used direct instruction guides and materials given to them to collect the data for the research. Each week, students read a different short story and then answered the question set given to them (or no questions as was the case for the control group). All students read the same story each week. During the final week and after all regular question sets were given, all students took the multiple choice comprehension exam for that text and they were also given the attitude survey. The results showed that both the story map and anthology question group outperformed the no post-reading question group and the difference was significant. However, there wasn't a significant difference between the story map group and the anthology group. These results showed the researchers that post-reading questions can have a positive effect on students' comprehension (Liang, Watkins, Graves, & Hosp, 2010).

Instead of using a story map, Walker and Mohr (1985) used the instructional method of self-directed questioning. The purpose of the study performed by Walker and Mohr (1985) was

to explore the effect self-directed questioning had on comprehension. The strategy of self-directed questioning includes making predictions and providing evidence for those predictions. It also involves evaluating other clues and altering predictions or making new predictions. The researchers wanted to see if independence in developing questioning would be more successful than the passive role students may take with teacher generated questions. The researchers hypothesized that there would be a difference in the pre and post test scores between the two different groups, the self-directed questioning group versus the teacher-directed questioning group (Walker & Mohr, 1985).

The dependent variable used to assess students was the New Developmental Reading Tests (Form A/B). This test was given as a pre and post test. An oral reading assessment from a basal reader was also given in order to determine the groupings of the students before the study began. The independent variables were the different groups that were formed and the instruction that was given to those groups. One group received training and practice on the self-directed questioning strategy while the other group received questions developed for the study and delivered by the teacher.

The subjects for the study included twenty-three intermediate grade students. To make sure that each group had a variety of skilled readers, students first were asked to orally read from a basal reader. Once their skill level was established, the students were randomly assigned into the two instructional groups. The study consisted of eight lessons that lasted sixty minutes each. After the pre-test was given to each participant, each group began their differed instruction. The group that the teacher delivered the questions was given 2-5 purpose setting questions from the basal manual before reading the text. After the text was read, the teacher asked seven literal questions and three inferential questions from the basal manual. The questions were answered

orally and the teacher led the discussion. The self-directed questioning group was first given instruction on the strategy. The teacher modeled the process and discussion took place. Students were instructed to make predictions from the title and use their background knowledge about the topic being read. Then students began to read the text silently. After the first paragraph, students were to pause and either adjust their predictions or make a new prediction. This same process was used after the next two paragraphs and then after every three paragraphs until the text was completed. The posttest was then administered on the last day of the study.

The difference between the pre and post test scores for the two groups was evaluated using a t-test. The results from a t-test showed a significant difference at the $p>.05$ level. The self-directed questioning group obtained higher scores than the teacher developed question group. The results showed that students in the self-directed group did especially better on implicit questions. The difference on explicit question between the two groups was not as great (Walker & Mohr, 1985).

Similar to the last study, Charmello (1993) explored the student generation of questions. The purpose of the research done by Charmello (1993) was to investigate the strategy of self-questioning prediction to determine if it would improve students' understanding of the text. Charmello hypothesized that the results would not show significant results in students' comprehension. The dependent variables were the pre and post tests using the Gates MacGinite Reading Comprehension Tests. The independent variable was the instruction on using the self-questioning prediction strategy. A control group was not used for this study. The participants in this study included seventeen eighth-graders. Six of these students were reading above grade level and six of the students were reading at grade level. Three of the students received reading

interventions and two of the students were special education students. All of the subjects were from the same middle school in New Jersey.

After students were given the pretest, students were instructed on the self-questioning prediction strategy. This includes identifying and writing down the main idea, developing a question related to the main idea, answering the question that was formulated, and finally making a prediction. First, the researcher focused on teaching how to identify the main idea. After students were able to correctly identify the main idea of a passage, the researcher facilitated the students' ability in formulating a question for the main idea and then making a prediction. The instruction consisted of six, thirty-eight minute sessions that were one week apart from each other. After all instructional sessions were completed, a posttest was administered. Taking the mean and standard deviations of the pre and post test data, the results were then analyzed using a t-test. At the .05 level, the results were shown to not be significant. Even though the results were not significant, sixteen of the seventeen students either increased their scores or their scores remained the same (Charmello, 1993).

The next study by Gunn (2008) examined the effect of structured and unstructured questioning on students' memory and learning when combined with domain knowledge and coherency of text. Coherency of text is what makes the text semantically meaningful. Gunn (2008) was interested in determining whether generic questioning stems (question structures such as 'how are ___ and ___ different?') would increase students' memory and learning. He also was interested in the interaction of domain knowledge and coherency had with structured and unstructured questioning. This study was built upon a previous study done by King in 1989 which examined the effects of generic question stems, signal word questions (who, what, where,

when, etc.), and unguided questions had on students comprehension in narrative texts. Gunn (2008), however, investigated the effects on expository text.

The independent variables were the three groups into which students were placed. Students were either assigned to the generic question stems group, signal words group, or unguided questioning group. The expository texts students read in this experiment were about blood and heart disease. To determine the level of background knowledge participants had, a prior knowledge questionnaire was given. The other dependent variable was a posttest that included twelve short answer questions that was comprised of explicit and inferential questions. Students also had to write a summary of the heart disease text to determine the level of information learned and retained in one's memory. Students also had the dependent variable of a sorting task to examine any changes in the understanding of the concepts and how they are structured. This sorting task of eighteen concept words was administered before and after reading the text.

The experiment was administered to sixty-three undergraduate psychology students at the University of Lethbridge in Canada. After students' previous knowledge questionnaire score was determined and then grouped by either a high or low score based upon the median, the participants were randomly assigned to one of the three treatments groups previously mentioned. Once assigned, they were given the instruction for that group. The generic question stems group and signal word group were taught about those specific types of questions and were given prompt cards that helped them develop questions. The generic question stems group had prompt cards that had question starters such as 'how does it apply to ___'. The signal word group had prompt cards that listed the words of who, what, where, when, why, and how on them. The unguided questioning group received no training of question generation and was just asked to

develop questions based on the text. The method for each group was applied to the experimental texts about blood and heart disease. After all dependent variables were given, results were collected and analyzed.

Using ANOVA, to determine the effects of each of the groups, the structured questioning groups (generic question stem and signal words) were shown to do significantly better than the unguided questioning group. The generic question stem group increased their scores more than the signal word group on text memory and text learning assessments, but this difference was not significant. This study also illustrated that those with high domain knowledge were generally able to recall more information from the text. Gunn (2008) discussed that high domain knowledge and structured questioning were predictors of text memory and text learning based upon the results of this experiment.

Conclusion

This chapter focused on how questioning impacts reading comprehension. The research included in this chapter presented different aspects of the reading comprehension strategy of questioning. The investigation of studies on questioning, studies that focused on the timing of questions, and studies that examined specific questioning strategies, collectively showed how questioning is used and its overall positive influence on comprehension. The different aspects explored from each study provide a basis for further research. Indeed, the ideas presented in the study gave insight to this action research.

Chapter Three
Procedures for the Study

Introduction

In the previous chapter I reviewed research that discussed the use of questioning in the classroom. Based upon these studies, I developed my action research in which students are guided to develop questions before, during, and after reading a text. This next chapter discusses the sample used, the procedures taken, and how the data was collected.

Description of Sample

Four students from my second grade class in the 2010-2011school year participated in my action research. Two of the students were seven years of age and two of the students were eight years of age. The group consisted of two males and two female. Two students were Caucasian, one was Hispanic, and one was Russian. None of the students received special education services or were English Language Learners. The participants were chosen based upon the Qualitative Reading Inventory-4 (QRI-4) reading assessment, which was given to all students in the classroom in February of 2011 (Caldwell, 2006). The four students were selected because they scored at the frustration level for comprehension. The action research was done in the classroom for twenty-five to thirty minutes, three days out of the week, for six weeks.

Procedures Used

Using the word identification lists from the QRI-4 assessment, I determined that all four students would be given a grade level two narrative passage as a pretest (Appendix 1). Since a grade level two passage from the QRI-4 was used to select the individuals for this study in February, I used a different grade level two passage for my pretest on March 1st to assess their current level of comprehension so that their growth could be as accurate as possible (Appendix 2). I recorded their word recognition scores as they read the text. Then I proceeded to ask the

comprehension questions that correlated with the passage. Their scores on this assessment showed that they were all still at the frustration level in comprehension. After their pretests were recorded, I met with students every Monday, Wednesday, and Friday for six weeks.

For the first week, I began each lesson with an explanation of the how the development of questions helps readers think about the text, and how this facilitates readers in their comprehension of the text. Then, I modeled for students how to develop questions before, during, and after reading. On Monday, I used *Henry and Mudge and the Forever Sea* book, by Cynthia Rylant, to model how I reflected about the title, the pictures on the cover, and the information on the back to develop questions before I read the book. I chose a *Henry and Mudge* book because it is a grade level text according to Fountas and Pinnell (1996). Fountas and Pinnell are researchers who developed a leveled book log and an assessment system that correlates with that list. My district levels books using Fountas and Pinnell recommendations, and therefore, that is why I used this resource to determine what level books I chose to use with the group. Even though these students demonstrated on the pretest that their comprehension level was minimal, students were able to read and decode words at their grade level text. After I explicitly modeled my thinking with students aloud before reading the text, I wrote my questions I created down so that all students could see how I was recording my thinking on a graphic organizer that I created (Appendix 3).

On Wednesday, I modeled how to develop questions while reading a text. I used the same *Henry and Mudge* book to show how I paused at the end of each page and thought about what I read. I shared questions that I developed and the thinking behind them while pausing to reflect about the text. I then wrote those ideas on the same graphic organizer used previously.

On Friday, I read the same text again and I modeled how I developed questions after I read. I shared how I thought about what happened in the story, and what I was still wondering.

During the second week of my study, I modeled how I developed questions before, during and after reading, but then asked for student participation during this time. After I shared some of my questions, I had students share their thinking, and I added those ideas to my list of questions on the same graphic organizer. Students wrote down the questions they developed as well. Using this method, I started to gradually release the responsibility of this task so that students would be prepared to develop questions independently (Thompson, 2008).

The remaining four weeks were spent with students practicing developing questions independently as they read. Each time we met, I would begin by reviewing how questioning helps readers think about the text and therefore helps them comprehend the text. Then, using various grade two level books, which I selected prior to meeting, the group would decide what book to read that day. After the group selected a book, students would formulate questions before reading the book and record those questions on the graphic organizer (Appendix 3). Once students finished writing down pre-reading questions, students would begin to read the book silently and record any questions they developed while reading. During this time, students were reminded to pause at the end of each page and think about if they had any questions. Each day I rotated between all four students and have each read aloud. While listening to each student, I monitored his or her practice of pausing at the end of each page and determined if he or she needed any individual support in reading the text and developing questions. Any questions that students formulated, while reading, were recorded on the graphic organizer. Finally, when students finished reading the book, they would write down any questions they had after reading on the graphic organizer. Throughout the daily lesson, I would assist students in developing

questions if it was needed. We would close each lesson by having students share questions they developed, and their thought process behind the development of those questions.

During the sixth week of this research, I gave students a posttest with the QRI-4. I evaluated their word identification abilities to determine the level of passage in which the students should be assessed (Appendix 1). Then I assessed students on the appropriate passage level. I recorded their word recognition abilities as students read the text, and then scored students' answers to comprehension questions after their reading was completed (Appendix 4). I also administered the level two test of the QRI-4 to individuals to provide a basis for comparison to the pretest, even if students were assessed at above levels based on the word identification scores.

Description of Data Collected

The data I collected enabled me to track the progress of the four students in the study using a mixed-methods approach. I used quantitative data so that I could be objective with the results of this study. This type of research is fairly new to studies; however, it is important because it allows for the interpretation of the data. It also allows for the reader to see the thoughts of the subjects. Quantitative data has been highly regarded in the education field, for a long time. Due to this, it is important for researchers to use this to quantify the data for easy analysis. I also used quantitative data so that student progress could be visually represented with the use of graphs. One set of data collected consisted of word lists from the QRI-4. The word lists were used to determine the level of text used for assessment (Appendix 1). Starting two levels below second grade, I gave each child a set of twenty words until a frustration level was attained. The creators of the QRI-4, Caldwell and Leslie (2006), recommend that the facilitator of the assessment start students two levels below their current grade level on the word lists.

Once a frustration level was achieved, I used the last instructional level achieved to determine what level reading passage students would receive. A pre and posttest of this assessment was given.

The next assessment was the word recognition and comprehension question parts of the QRI-4 (Appendix 2 for the pretest and Appendix 4 for the posttest). Students read the level passage that was determined by the word lists. As students read, I recorded and miscues that students had while reading in order to gauge their accuracy. Then I had students retell the story and documented what points of the story were retold. Finally, I asked students literal and inferential questions, from the QRI-4, to determine the level of understanding students acquired. These sections of the QRI-4 were administered before the study and after the completion of the study.

During my research, I had students fill out a graphic organizer that I created (Appendix 3). This graphic organizer was used to help students categorize the questions they formulated by questions that were made before reading, during reading, or after reading. This graphic organizer was also used as a way to document students' abilities throughout the study. Each day the group met, students filled out the same type of graphic organizer. Students were asked to have at least one question for each category of before, during, and after. However, after producing one question in each category, the quantity of questions created varied. Different books that were at the students' level based upon the QRI-4 pretest scores were used to fill out the organizer each day.

Conclusion

This chapter first discussed the sample and how the students were chosen for this study. The procedure utilized to accomplish the study was discussed next, including my instruction

methods, and the tasks students were asked to complete. Finally, different assessments were described that were used to determine the effectiveness of this research, including pre- and post-reading QRI-4 assessments. In the next chapter, I will explain the results of these assessments and procedures.

Chapter Four
Results

Introduction

In the previous chapter, I explained the procedures of my instruction. I also described the different assessments that were used to gather data. In the following chapter I will report the results of the instruction and assessments.

First, I will describe the results of the word lists from the QRI-4, which were used to determine the appropriate passages students were to read both for the pretest and posttest. Then, I will share the findings from the word recognition section of the QRI-4 pretest and posttest scores to show students' accuracy and words per minute while reading the passages. Finally, I will explain the findings of the comprehension questions section of the QRI-4, after students read the passages during the pretest and posttest.

Analysis of Data

Word lists.

The word list scores are separated by automatic scores and total scores. Automatic scores are the amount of words that students read within three seconds of seeing the word. Total scores are the amount of automatic words plus any other words that took longer than three seconds for students to read. Word identification is divided into different segments based on grade levels. The different word lists include the word identification primer level, word identification first grade level, word identification second grade level, and word identification third grade level. The primer level is considered the kindergarten level.

The following tables show the automatic scores on the pretest and on the posttest:

Table 4.1: Automatic Scores on Pretest

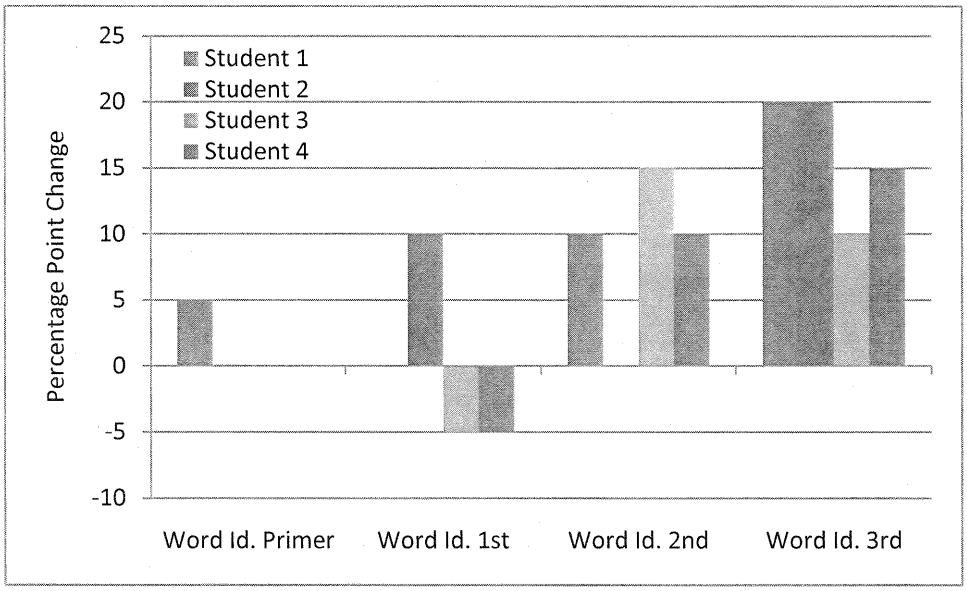
Automatic Scores on Pretest	Word Identification. Primer	Word Identification 1st Grade	Word Identification 2nd Grade	Word Identification 3rd Grade
Student 1	95	95	85	60
Student 2	100	90	85	65
Student 3	100	100	70	50
Student 4	100	100	80	55

Table 4.2: Automatic Scores on Posttest

Automatic Scores on Posttest	Word Identification. Primer	Word Identification 1st Grade	Word Identification 2nd Grade	Word Identification 3rd Grade
Student 1	100	95	95	80
Student 2	100	100	85	85
Student 3	100	95	85	60
Student 4	100	95	90	70

The following graph shows percentage point changes in performance on words read automatically by students at different levels between pretest and posttest. For example, if a student received ten points out of 100 on a pretest, and fifteen points on a posttest, the percentage point increase would be five points. This differs from a percent increase which would be 50%. The percentage point change for the pre and posttest scores on the word lists are illustrated in the graph below.

Figure 1: Automatic Word List Scores: Percentage Point Change, Pretest vs. Posttest



These results show that student performance generally improved from pretest to posttest with respect to the ability to recall words automatically. The impact was most notable for the word lists at the second and third grade level tests. The only student who did not show improvement at the second grade level was Student Two, who read 85% of the words automatically both on the pretest and posttest. All students, except for Student One, read 100% of the primer words automatically on the pretest, and therefore improvement was not obtainable. Student One did improve at the primer level from reading 95% of the words automatically on the pretest to reading 100% of the words automatically on the posttest for a percentage point change of 5%. On the first grade level test, Student One scored the same on the pretest as on the posttest by reading 95% of the words automatically. Students Three and Student Four read 100% of the words on the first grade level test automatically on the pretest, but then read 95% of the words automatically on the posttest giving a negative percentage point change of 5%. Taking the performance of all four students into consideration, it is difficult to draw a conclusion from

the data related to the primer and the first grade level tests. This is because, as discussed above, there was no consistent pattern with respect to the influence of the instruction on student scores.

The following tables show the total word list scores on the pretest and posttest. Again, these scores include words read automatically in addition to words that took longer than three seconds to read.

Table 4.3: Total Word List Scores on Pretest

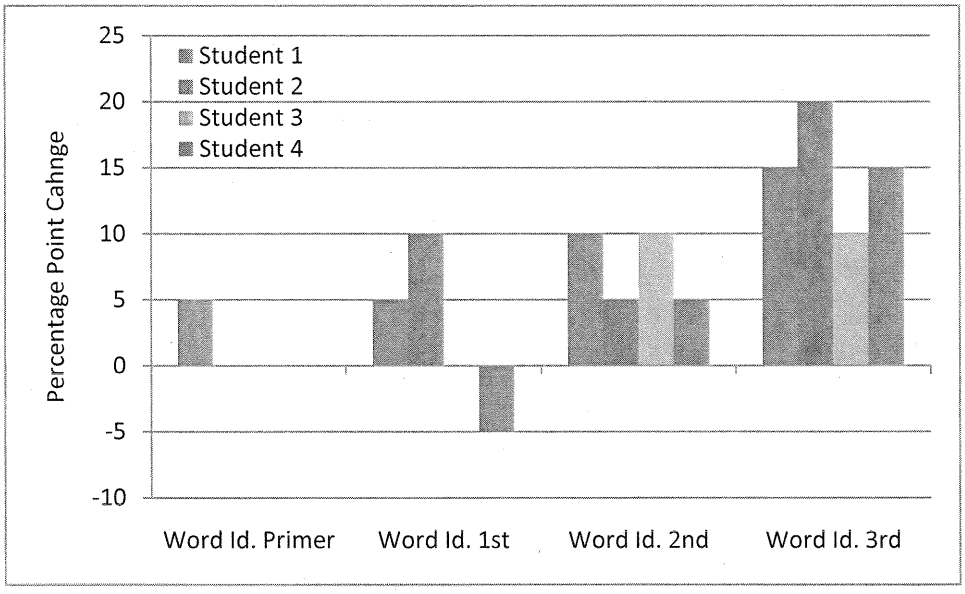
Total Word List Scores on Pretest	Word Identification. Primer	Word Identification 1st Grade	Word Identification 2nd Grade	Word Identification 3rd Grade
Student 1	95	95	85	65
Student 2	100	90	85	65
Student 3	100	100	75	55
Student 4	100	100	85	60

Table 4.4: Total Word Lost Scores on Posttest

Total Word List Scores on Posttest	Word Identification. Primer	Word Identification 1st Grade	Word Identification 2nd Grade	Word Identification 3rd Grade
Student 1	100	100	95	80
Student 2	100	100	90	85
Student 3	100	100	85	65
Student 4	100	95	90	75

The following graph shows percentage point change in performance of the total amount of words read by students at different levels between pretest and posttest.

Figure 2: Total Word List Scores: Percentage Point Change, Pretest vs. Posttest



Similar to the automatic word list scores, the results show a general improvement from pretest to posttest scores. At the primer level, Student One showed some improvement from pretest to posttest. The other three students scored 100% on the pretest and posttest. Two of the four students improved at the first grade level. However, one student went from reading 100% of the first grade level words on the pretest to reading 95% of the words on the posttest resulting in a negative percentage point change of 5%. Finally, all students showed improvement in reading the word lists at the second and third grade levels.

In summary, based on the scores of the automatic and total word lists, the magnitude of improvement is greater as the level of difficulty in tests increases.

Word recognition.

After students were given the word lists, they were assessed while reading a level two passage from the QRI-4. The level two passage is considered to be at the second grade reading level. The miscues students made while reading were recorded as part of the word recognition

assessment. This allowed for reading accuracy to be measured. This assessment also measured the amount of words students read per minute (WPM). The following tables show the word recognition scores on the pretest and posttest.

Table 4.5: Word Recognition Scores on Pretest

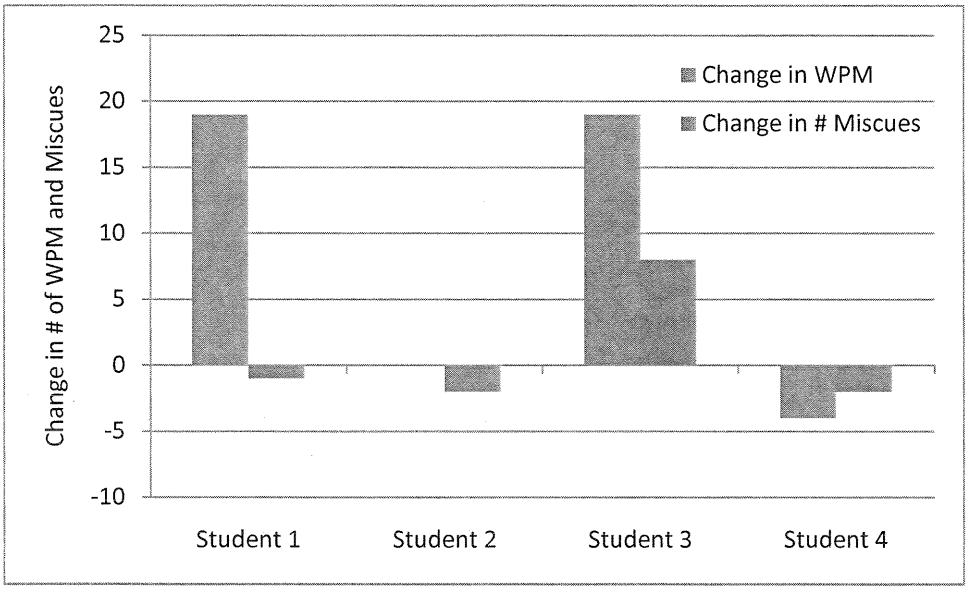
Word Recognition Scores on Pretest	Total Miscues	WPM
Student 1	2	67
Student 2	4	131
Student 3	1	98
Student 4	2	102

Table 4.6: Word Recognition Scores on Posttest

Word Recognition Scores on Posttest	Total Miscues	WPM
Student 1	1	86
Student 2	2	131
Student 3	9	117
Student 4	0	98

The following graph shows the change in words per minute between the pretest and posttest exams. The graph also shows the change in the number of miscues between pre and post exams. Both the change in words per minute and the change in the number of miscues are shown on the graph in absolute terms, meaning that the actual numbers from the data are presented, instead of the percent point change.

Figure 3: Word Recognition Scores: Pretest vs. Posttest



The results show that the words per minute (WPM) increased dramatically for two of the four students, but did not change for Student Two. Student Four's WPM declined from 102 WPM on the pretest to 98 WPM on the posttest showing a small decrease. On average, the WPM increased; however, this improvement is mainly due to the meaningful improvement made by two students.

The number of miscues declined for three of four students, though Student Three had a notable increase in miscues, going from one miscue on the pretest to nine miscues on the posttest. Student Three also achieved a much higher WPM on the posttest. While the number of miscues went down for three of four students, the fact that it went much higher for one who also saw a meaningful increase in WPM begs the question of whether increased WPM comes at the expense of accuracy. The results show there is not consistent improvement in WPM. In sum, it

is difficult to draw meaningful conclusions from this data due to the wide range of results that occurred among the students.

Comprehension questions.

Students were asked a total of eight comprehension questions from the Level Two QRI-4 passage that was read. These eight questions consisted of four explicit questions and four implicit questions. Explicit questions are defined as questions in which the answers can be found within the text. Implicit questions are defined as questions in which the answers must be inferred. The following tables show the comprehension scores for the pretest and posttest. The levels that are listed correspond to the total comprehension scores. The frustration level means that students answered a total of zero to five comprehension questions out of the eight questions correctly. The instructional level means that students answered six to seven comprehension questions out of the eight questions correctly. The independent level means that students answered eight out of the eight comprehension questions correctly.

Table 4.7: Level Two Comprehension Scores on Pretest

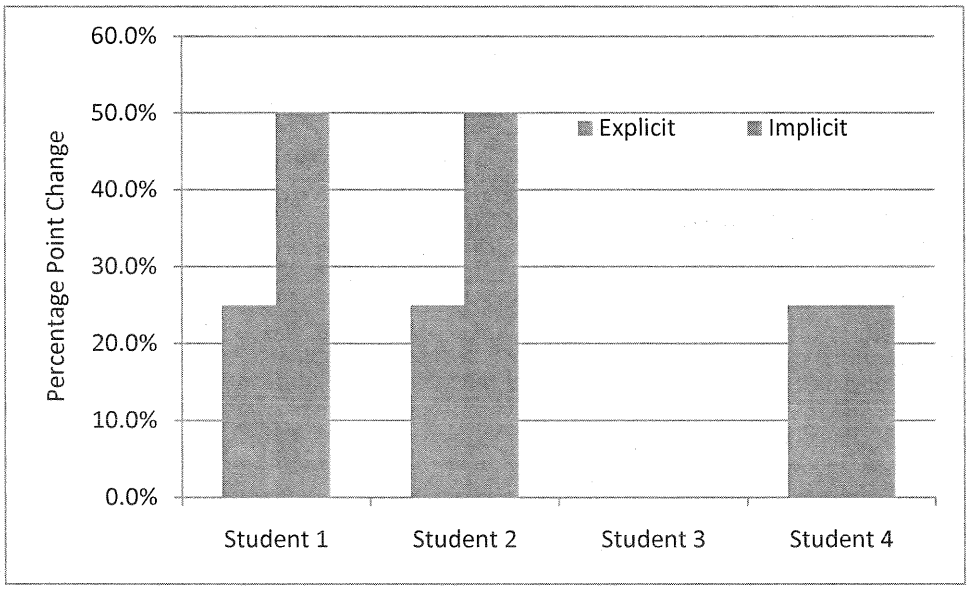
Level Two Comprehension Scores on Pretest	Number of Explicit Questions Answered Correctly	Number of Implicit Questions Answered Correctly	Total Number of Questions Answered Correctly	Level
Eli	3	2	5	Frustration
Natalie	3	2	5	Frustration
Brett	2	1	3	Frustration
Gabriela	3	2	5	Frustration

Table 4.8: Level Two Comprehension Scores on Posttest

Level Two Comprehension Scores on Posttest	Number of Explicit Questions Answered Correctly	Number of Implicit Questions Answered Correctly	Total Number of Questions Answered Correctly	Level
Eli	4	4	8	Independent
Natalie	4	4	8	Independent
Brett	2	1	3	Frustration
Gabriela	4	3	7	Instructional

The following graph shows the change in correct answers to explicit and implicit comprehension questions between pre and post exams. The unit that is used is percentage point change.

Figure 4: Comprehension Scores: Percentage Point Change, Pretest vs. Posttest



Overall, three of four students showed improvement for both explicit and implicit comprehension scores. Student One and Student Two had a percentage point increase of 25% for explicit questions. Both students also had a 50% percentage point increase in scores on implicit questions. Student Three showed no change in scores from the pretest to the posttest. Student Three also had an increase in miscues on the word recognition section of the QRI-4,

which may or may have not affected the student's comprehension score. Student Four had a 25% percentage point increase on both explicit and implicit questions. The magnitude of percentage point change was greater on average for implicit questions than for explicit questions. Whether this is coincidence or a meaningful relationship is not determinable without increased sample size.

Conclusion

In this chapter, the data was illustrated and discussed. Improvement was made by most students in the areas of word identification, accuracy, and comprehension. The ultimate goal of this study was for students to increase their comprehension. Indeed, three out of four students showed an increase in their comprehension abilities on the posttest. However, a larger sample size would be needed to obtain significance from the data. In the next chapter, I will further discuss the data and relate the study to the research and my findings about the strengths and limitations of the study.

Chapter Five
Conclusions

The previous chapter presented the data of this study. Throughout this chapter, the data will be discussed and compared to the research shared in chapter two and the Common Core Standards. The strengths and limitations of this study will also be included, as well as recommendations for further study.

Connection to Research and Connections to Standards

Students were asked to develop questions before, during, and after reading a grade level text to improve comprehension. The results of this study showed three out of four students improved their comprehension. This outcome is similar to the study by Clark, Deshler, Schumaker, Alley, and Warner (1984) who taught students to develop questions and visualize the story. Even though my action research concentrated on just one strategy, both studies showed general improvement of students' comprehension on grade level texts. Both this action research and their study also had one subject that did not improve.

Another study that mirrored the results of this action research is the study by Rosenshine, Meister, and Chapman (1996). In their study, students generated questions during and after reading. Their data also showed that students increased their comprehension when question generation was taught and applied. An additional study that was discussed in chapter two which showed positive results in student comprehension is Mason's (2004) research. Like this action research, Mason's (2004) study also showed that students benefited from thinking before reading, while reading, and after reading. Though a larger sample size is needed to determine significance with the data of this action research, the data from this study and other studies from chapter two suggest that students who develop questions during the reading process may improve their comprehension.

Having students concentrate on developing questions also connects with the Common Core Standard RL.1, which states that students need to ask and answer questions to demonstrate understanding of key details in a text. Throughout the study, students made questions before, during, and after reading on a graphic organizer. After practicing the questioning strategy, the improvement in their level of understanding was evidenced by the magnitude of improvement on the posttest comprehension scores. This improvement in comprehension also connects to the standard RL.10, as students are demonstrating an understanding for grade level text. Students practiced the questioning strategy using grade level texts that were chosen for the students. The books that were selected were based upon the Fountas and Pinnell (1996) leveling system, which was discussed in chapter three. Again, their understanding was substantiated by the increase in posttest comprehension scores.

Explanation of Results

As stated previously, the results of this study show that three out of four students improved their comprehension. The initial hypothesis stated that students who develop questions before, during, and after reading would improve their comprehension abilities. For most of the students this was true. I believe that students understood what they were reading because they were elaborating on the text by developing questions, instead of solely focusing on reading the words. According to Irwin (2007), students who effectively use the process of elaboration, which includes engaging background knowledge and making questions, tend to recall more information. Two of the three students who showed improvement in comprehension made larger gains in implicit comprehension questions than explicit comprehension questions. This data suggests that those students were indeed thinking about the reading in order to draw conclusions from the text. The data also shows improvements in word identification and reading accuracy

for three of the four students as well. This improvement could also have been a beneficial factor in influencing students' understanding.

Even though three out of four students improved, one student's comprehension scores remained the same. This student also exhibited an increase in the number of miscues and words per minute on the posttest. These mistakes and an increase in reading speed may have been a factor in the lack of improvement in comprehension on the posttest. Also, my background knowledge with working with this student all year has revealed to me that this student has test anxiety. His anxiety may have contributed to his scores. This particular student may need to be instructed on additional literary skills to help his comprehension, such as other comprehension or decoding strategies.

Limitations and Recommendations for Further Research

Even though some students showed improvement, the limitation of the small sample size makes it hard to draw significant conclusions on whether or not developing questions before, during, and after reading increased students comprehension. If this research were to be repeated, a larger sample size would allow for the possibility of significance and correlation measures to be obtained. Another limitation of this study was that it did not attempt to measure the quality of the questions developed by students. If I were to perform this research again, I would analyze the questions made in order to compare the results with students' comprehension scores. I would be interested in determining if the students who developed quality questions had the most gains in comprehension, or vice versa.

A further recommendation for future studies would be to have a control group. This would relieve the limitation of not being able to compare the results. As a result, it could be understood if the effects of this study were a deciding factor in increasing students'

comprehension. Furthermore, I would recommend having a retention measure such as assessing students weeks after instruction concluded to examine if the skills taught were retained by students.

Strengths of the Study

Even though there are aspects of the study that I would change in regards to future research, there are a number of strengths that this study contained. First, the results of this study showed improvement for three out of four students in their comprehension abilities. These positive results provide support for teaching the questioning strategy. Another strength of this study was the individual analysis of students that was provided through the QRI-4. The data allowed me to see what areas students excelled in and what areas where further instruction is needed. For example, in the word recognition assessment, Student Three's results of an increase in words per minute, but also an increase in the number of miscues, advised me that this student needs further instruction on reading accurately in hopes that, in return, it would also help his comprehension.

Conclusion

This action research provides evidence that student generation of questions before, during, and after reading can improve students' comprehension abilities. This study was based upon the ideas from other researchers and their studies. Though there are limitations to this study, the data from this research relates to some of the results of the studies in chapter two, which support the use of the questioning comprehension strategy in the classroom. Therefore, I would recommend teachers implement instruction and student practice of the questioning strategy.

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Appendix 1

Examiner Word Lists

Pre-Primer

	Identified Automatically	*Identified*
1. can		
2. who		
3. I		
4. work		
5. write		
6. at		
7. with		
8. my		
9. he		
10. too		
11. the		
12. in		
13. she		
14. other		
15. make		
16. place		
17. go		
18. to		
19. see		
20. do		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

Primer

	Identified Automatically	*Identified*
1. keep		
2. need		
3. not		
4. what		
5. children		
6. thing		
7. was		
8. animal		
9. they		
10. were		
11. saw		
12. want		
13. every		
14. went		
15. like		
16. from		
17. said		
18. live		
19. comes		
20. help		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

LEVELS		
Independent	Instructional	Frustration
18–20 90–100%	14–17 70–85%	below 14 below 70%

Examiner Word Lists

First

	Identified Automatically	*Identified*
1. bear		
2. father		
3. find		
4. sound		
5. friend		
6. song		
7. thought		
8. there		
9. run		
10. then		
11. move		
12. knew		
13. brain		
14. air		
15. without		
16. afraid		
17. wind		
18. heard		
19. put		
20. looked		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

Second

	Identified Automatically	*Identified*
1. morning		
2. tired		
3. shiny		
4. old		
5. trade		
6. promise		
7. pieces		
8. picked		
9. push		
10. though		
11. begins		
12. food		
13. light		
14. ends		
15. clue		
16. breathe		
17. insects		
18. weather		
19. noticed		
20. money		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

LEVELS		
Independent	Instructional	Frustration
18–20 90–100%	14–17 70–85%	below 14 below 70%

Examiner Word Lists

Third

	Identified Automatically	*Identified*
1. lunch		
2. celebrate		
3. believe		
4. claws		
5. lion		
6. rough		
7. wear		
8. tongue		
9. crowded		
10. wool		
11. removed		
12. curious		
13. sheep		
14. electric		
15. worried		
16. enemies		
17. glowed		
18. clothing		
19. swim		
20. entrance		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

Fourth

	Identified Automatically	*Identified*
1. sunlight		
2. desert		
3. crops		
4. engine		
5. favorite		
6. adaptation		
7. weather		
8. pond		
9. illustrated		
10. ocean		
11. pilot		
12. fame		
13. precious		
14. settlers		
15. guarded		
16. passenger		
17. memorize		
18. environment		
19. adventurer		
20. invented		

Total Correct Automatic _____ /20 = _____%

Total Correct Identified _____ /20 = _____%

Total Number Correct _____ /20 = _____%

LEVELS		
Independent	Instructional	Frustration
18–20 90–100%	14–17 70–85%	below 14 below 70%

Level 3

Level 4

Appendix 2

Level: Two

Narrative

Concept Questions:

What does "new toys" mean to you?

_____

_____

_____ (3-2-1-0)

What does "toys you've had a long time" mean to you?

_____

_____

_____ (3-2-1-0)

What are reasons for trading toys?

_____

_____

_____ (3-2-1-0)

Score: _____ /9 = _____ %

_____ FAM _____ UNFAM

Prediction:

_____

_____

"What Can I Get for My Toy?"

It was a Saturday morning. John looked at the toys in his room. They were all old and he wanted something new. John went to his mother. "All my toys are old," he said. "I want something new to play with." His mother looked at him. "John, we don't have the money to buy you anything new. You'll have to find a way to make something new." John went back to his room and looked around at the toys. There were many toys that were fun. But he had played with them so much that they weren't fun anymore. Then he had an idea. His friend Chris wanted a truck just like his red truck. And John wanted a car like the one Chris got for his birthday. Maybe they could trade. John ran down the street to Chris's house. "Hey, Chris, would you trade your car for my truck?" "Sure," said Chris. "I'll trade. Later we can trade something else. That way we'll always have something new to play with." (175 words)

Number of Total Miscues (Total Accuracy): _____

Number of Meaning-Change Miscues (Total Acceptability): _____

Total Accuracy		Total Acceptability
0–4 miscues	____ Independent	____ 0–4 miscues
5–18 miscues	____ Instructional	____ 5–9 miscues
19+ miscues	____ Frustration	____ 10+ miscues

Rate: 175 × 60 = 10,500/____ seconds = ____ WPM

____ WPM – ____ errors = ____ CWPM

Level: Two

Retelling Scoring Sheet for "What Can I Get for My Toy?"

Setting/Background

___ John looked at his toys.
___ They were old.

Goal

___ John wanted something
___ that was new.

Events

___ John went to his mother.
___ "My toys are old,"
___ he said.
___ "I want something
___ new
___ to play with."
___ His mother looked
___ at John.
___ "We don't have money
___ to buy something
___ new."
___ John had played with his toys
___ so much
___ that they weren't fun
___ anymore.
___ His friend
___ Chris wanted a truck
___ just like his truck
___ his red truck
___ and John wanted a car
___ like Chris's car.
___ Maybe they could trade.
___ John ran
___ down the street
___ to Chris's house.
___ "Would you trade your car
___ for my truck?"
___ "Sure,"
___ said Chris.

Resolution

___ "We can trade something else
___ later.
___ We'll always have something
___ new
___ to play with."

38 Ideas

Number of ideas recalled _____

Other ideas recalled, including inferences:

Questions for "What Can I Get for My Toy?"

1. At the beginning of the story, what did John tell his mother he wanted?
   Explicit: something new to play with

2. Why did John want a new toy to play with?
   Implicit: because he had played with his old toys so much they weren't interesting to him anymore; he got bored with them. *Note:* "Broken" is not acceptable—the story discusses John's boredom and indicates that his toys were desired by another child.

Level: Two

3. What did John's mother say when he asked her to buy something new for him?
   Explicit: they didn't have the money to buy anything new; he'd have to make something new

4. What did John do to get what he wanted?
   Explicit: he went to his friend's house and asked him to trade toys with him

5. Why was trading a good idea?
   Implicit: the boys would always have something new to play with; boys had new toys without spending money

6. At the end of the story, what did his friend suggest that they do?
   Explicit: trade again later

7. In the future what must both boys have for trading to make them both happy?
   Implicit: toys that the other boy wanted

8. Why do you think that the boys will trade again?
   Implicit: they will get bored with the toys they traded; they will want a new toy again

Number Correct Explicit: ____

Number Correct Implicit: ____

Total: ____

____ Independent: 8 correct

____ Instructional: 6–7 correct

____ Frustration: 0–5 correct

Appendix 3

BEFORE	
DURING	
AFTER	

Appendix 4

Level: Two

Narrative

Concept Questions:

What does it mean if something is lucky?

_____

_____

_____ (3-2-1-0)

What is a cricket?

_____

_____

_____ (3-2-1-0)

What does "coiled" mean?

_____

_____

_____ (3-2-1-0)

How could a bird communicate with a person?

_____

_____

_____ (3-2-1-0)

Score: _____ /12 = _____ %

_____ FAM _____ UNFAM

Prediction:

_____

_____

"The Lucky Cricket"

Once upon a time there was a young girl by the name of Ling-Ling. She was playing in a garden one day and found a cricket. "Crickets are lucky," she said. "I will keep this cricket and it will bring me luck." Ling-Ling put the cricket in her pocket. The cricket heard Ling-Ling and said to himself, "I'm not lucky! How can I be lucky? I'm just a cricket."

Ling-Ling looked up at the sky. As she did, a lovely crane landed beside her. The crane looked at Ling-Ling for a long time before it nodded its head at her and flew away. "How lucky I am to have seen this beautiful crane," said Ling-Ling. "It must be because of my lucky cricket!" Again, the cricket heard Ling-Ling. "The crane did not come because of me. I am not lucky. Ling-Ling is wrong."

Then Ling-Ling walked onto a bridge. As she looked into the stream below, she saw a beautiful goldfish. She sat on the bridge to look at the fish more closely. The fish stopped swimming and looked into Ling-Ling's eyes. "What a beautiful fish," said Ling-Ling. "How lucky I am to have seen it. It must be because of my lucky cricket!" Again, the cricket heard her and thought, "The fish did not come to Ling-Ling because of me. I am not lucky. I want to get out of here."

Ling-Ling got up and saw a shiny stone in the water. "I will take that stone to my grandmother," thought Ling-Ling, and she reached to pick it up. Just then the cricket jumped out of her pocket and landed on her neck. Ling-Ling was surprised and pulled her hand back. As she looked down, she saw

Level: Two

a water snake coiled around the stone. "If I had picked up that stone, the snake would have bitten me," she said. "My lucky cricket saved me." "I did save her!" said the cricket. "If I hadn't jumped on her, she would have picked up that stone with the snake. Maybe I am lucky after all." (346 words)

Number of Total Miscues
(Total Accuracy): _____

Number of Meaning-Change Miscues
(Total Acceptability): _____

Total Accuracy		Total Acceptability
0–8 miscues	____ Independent	____ 0–8 miscues
9–36 miscues	____ Instructional	____ 9–17 miscues
37+ miscues	____ Frustration	____ 18+ miscues

Rate: 346 × 60 = 20,760/____ seconds = ____ WPM

____ WPM – ____ errors = ____ CWPM

Retelling Scoring Sheet for "The Lucky Cricket"

Setting/ Background

____ Once upon a time
____ there was a girl
____ by the name of Ling-Ling.
____ She was playing
____ and found a cricket.

Goal

____ "Crickets are lucky,"
____ she said.
____ "I will keep this cricket."
____ Ling-Ling put the cricket
____ in her pocket.
____ The cricket said to himself,
____ "I am not lucky."

Events

____ Ling-Ling looked at the sky.
____ A crane landed beside her.
____ The crane looked at Ling-Ling
____ for a long time
____ before it flew away.
____ "How lucky I am
____ to have seen this beautiful crane,"
____ said Ling-Ling.
____ "It must be because of my lucky cricket."
____ The cricket heard Ling-Ling.
____ "I am not lucky."
____ Ling-Ling walked onto a bridge.
____ She saw a goldfish.
____ The fish stopped swimming
____ and looked into Ling-Ling's eyes.
____ "What a beautiful fish,"
____ said Ling-Ling.
____ "How lucky I am to have seen it.
____ It must be because of my lucky cricket."
____ The cricket thought
____ "I am not lucky.
____ I want to get out of here."
____ Ling-Ling saw a shiny stone
____ in the water.
____ She reached to pick it up.
____ The cricket jumped
____ out of her pocket
____ and landed on her neck.
____ Ling-Ling pulled her hand back.
____ She saw a snake
____ coiled around the stone.
____ "If I had picked up that stone,
____ the snake would have bitten me."
____ "My lucky cricket saved me."

Resolution

____ "I did save her!" said the cricket.
____ "If I hadn't jumped on her
____ she would have picked up the stone

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____ with the snake.
____ Maybe I am lucky
____ after all."

52 Ideas

Number of ideas recalled _____

Other ideas recalled, including inferences:

Questions for "The Lucky Cricket "

1. Where did the story take place?
   Explicit: in a garden

2. At the beginning of the story, why did Ling-Ling keep the cricket she found?
   Explicit: because she thought it would bring her luck

3. Why did Ling-Ling think that the cricket was lucky after she'd seen the crane?
   Implicit: it looked at her for a long time; it nodded its head at her; it seemed to communicate with her; *or* she thought it came to her because of the cricket

4. Why did the cricket want to get away from Ling-Ling?
   Implicit: because he didn't think he was lucky

5. What did Ling-Ling see when she sat on the bridge?
   Explicit: a goldfish

6. Why did Ling-Ling want to pick up the shiny stone in the water?
   Explicit: she wanted to give it to her grandmother

7. How did the cricket surprise Ling-Ling when she reached to pick up the stone?
   Implicit: he jumped out of her pocket and landed on her neck

8. Why did the cricket decide at the end that he was lucky after all?
   Implicit: he thought that maybe he was lucky because he had saved her from picking up the snake

Number Correct Explicit: ____

Number Correct Implicit: ____

Total: ____

____ Independent: 8 correct

____ Instructional: 6–7 correct

____ Frustration: 0–5 correct